SSLC EASY A PLUS

MATHEMATICS MODEL QUESTIONS WITH ANSWERS –English Medium

1) If 1+4+7+…….+x = 287, then

a) find the value of "x" ?

b) Calculate the number of terms up to "x".

Ans:- Consider the series 1,4,7,10,……..,x

Here the common difference of this AP is 3

Suppose 'x' is the n^{th} term, Now sum of the terms up to x = 287 is given

n = ——— **+1 =** —— **+1 =**——— **=** ——

a) Sum of n terms = $\frac{n}{2}(1+x) = 287$

$\frac{n}{2}(1+x) = 287$

$\frac{n}{2}(x+1) = 287$

$(x+2)(x+1) = 6\times287$

$X^2+3x+2 = 1722$

$X^2+3x- 1720 = 0$

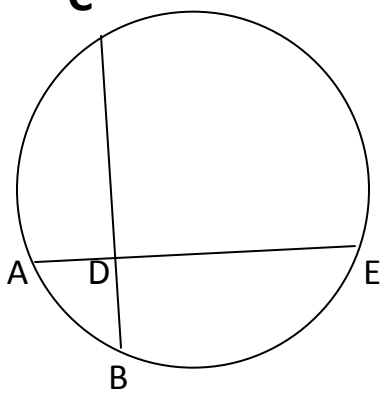
$(X+43)(X-40) =0$

So x = 40 , Hence the value of "x" = 40

b) n = —— ——— **=** — **= 14**

No. of terms up to 'x' = 14

2.



In the given figure AE is perpendicular to CE. AB = 5cm, BD= 4cm, CD= 9cm, Find the length of DE?

Ans:- In Right △ ADB ,

AD= $\sqrt{5^2-4^2}$

= $\sqrt{9}$ = 3cm

Now from the figure we get CD×DB = AD×DE

ie 9×4 = 3×DE

Hence **DE** = —— **= 12cm**

3). A box contains 5 black balls and 3 white balls. Another contains 6 black balls and 4 white balls. One ball is taken from each box at random.

i) What is the probability of getting both balls black ?

ii) What is the probability of getting both balls white ?

iii) What is the probability of getting balls of different colours ?

5B, 3W	6B, 4W

Ans:-

i) Probability of getting both balls black = ——— **=** —— **=** —

ii) Probability of getting both balls white = ——— **=** —— **=** ——

iii)Probability of getting balls of different colours = ——— **=** —— = ——

4). The sum of the reciprocals of Arun's age before 3 years and after 5 years is **—.**

Calculate his present age ?

Ans:- Suppose Arun's present age is X

Then age before 3 years = X-3

Then age after 5 years = X+5

So —— **+** —— **=** — **is given.**

————— **=** —

————— **=** —

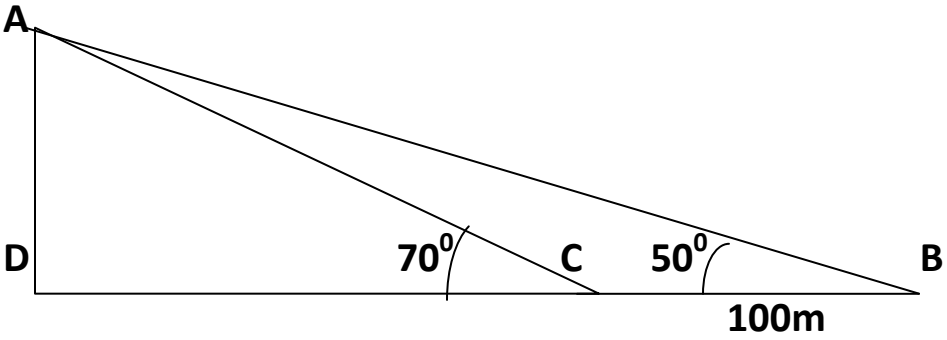
3 (**2** **2)** **=**

=

= 0

So X = 7 or -3
ie Arun's present age = 7

5) A man standing on ground level sees the top of a far away hill at an elevation of 70^0 . Moving 100m to back he sees it at an elevation of 50^0. Find the approximate height of the hill ? (Approximate value of Tan 70^0 = 2.8, Tan 50^0 = 1.2)



From the figure, the height of the hill is the length AD, B&C are the man's positions.
Taking the length CD as X, BD = X+100

From right triangle ACD, Tan 70^0 = ——

AD = 2.8 x .....(1)

From right triangle ABD, Tan 50^0 = ————

AD = 1.2( )
= 1.2x .....(2)

Equating (1) & (2) we get **2.8 x = 1.2x**

2.8 x — 1.2x = 120
1.6x = 120
x = 120/1.6 = 75

Therefore Height of Hill = 2.8 × 75 = 210m

6) If x-2 is a factor of

a) Find the value of K ?

b) Find the reminder on dividing this polynomial by x+1 ?

Ans:- a) Since x-2 is a factor, then P(2) =0

ie, $2^3 - 2 * 2^2 + \boldsymbol{K} * \mathbf{2} + \mathbf{10} = \mathbf{0}$

8-8+2K+10 = 0

2K= -10 Hence K = -5

So P(x) = x

b)Reminder on dividing P(x) by x+1 is P(-1)

So P(-1) = $(-$

= -1-2+5+10 = 12, Hence the reminder.

7) The table below shows the workers in a factory sorted according to their daily wages. Find the Median wage?

Daily Wages(Rs)	No. of Workers
400-500	7
500-600	10
600-700	12
700-800	20
800-900	15
900-1000	8
1000-1100	3

Daily Wages(Rs)	No. of Workers	x	y
Upto 500	7	500	7
Upto 600	10	600	17
Upto 700	12	700	29
Upto 800	20	800	49
Upto 900	15	900	64
Upto 1000	8	1000	72
Upto 1100	3	1100	75

Here Median means, y = 75/2 = 37.5, which belongs to an X

From the above table, we can see the position of y = 37.5 as between 29 and 49

As per proportional theorm, $\frac{x - 700}{800 - 700} = \frac{37.5 - 29}{49 - 29} = \frac{x - 700}{100} = 8.5/20$

X= 850/20 + 700 = 742.5

Therefore **Median wage = 742.5**

8) The line joining the points with coordinates (4,3) and (0,1) is drawn

i) What is the length of this line?

ii) What are the coordinates of the midpoint of the line?

iii) What is the equation of the circle with this line as diameter?

iv) What is the equation to determine the x – coordinates of the points where this circle intersects the x-axis. Find the coordinates of these points using this equation?

Ans:- i) Length of the line = $\sqrt{(4-0)^2 + (3-1)^2} = \sqrt{20} = 2\sqrt{5}$

ii) Midpoint coordinates = (2,2)

iii) Let (x,y) be the point on the circle. Then $(x-2)^2 + (y-2)^2 = (\sqrt{5})^2$

ie,

= 0, hence the equation

iv) Let the circle touches the x-axis (x,0) then y=0

So x

(x-3)(x-1) = 0

X= 3 or 1

Hence circle touches the x-axis @ (3,0), (1,0)

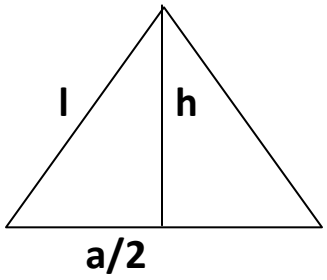
9) A tent is in the shape of a square pyramid. It's base area is 576 m^2 and height is 16 m. Find the cost of canvas required to make the tent at the rate of Rs. 15 per m^2 .

Ans:- If 'a' is one side of the base, then base area, $a^2 = 576$

So, a = $\sqrt{576} = 24m$

Height of tent = 16m is given

We have to find the slant height of the tent



So Slant height, $l=\sqrt{(a/2)^2 + h^2}$

$l = \sqrt{12^2+16^2} = \sqrt{400} = 20$ m

Now area of Canvas required to make the tent = Lateral Surface Area of the tent

$= 2al = 2 \times 24 \times 20 = 960$ m^2

Therefore Cost of canvas @Rs.15/ m^2 = 960

10) A) In ΔPQR , PQ=7.5cm ,<P=55^o, <R=65^o

- **Draw ΔPQR**
- **Draw a circle such that sides of the triangle are the tangents of the circle**
- **Measure the radius of the circle**

Or

B) Draw a circle of radius 4cm and draw a rhombus with one angle 40^o, all four sides touching the circle

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